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IN THE

SUPREME COURT OF THE UNITED STATES

October Term 1966

No. 436

Norfolk Dredging Company,
a Virginia corporation,
Petitioner,

v.

The United States,
Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

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Norfolk Dredging Company, your Petitioner, prays that a writ of certiorari issue to review the judgment of the United States Court of Claims, entered in the above-entitled case on May 13, 1966.

OPINION BELOW

The opinion of the Court of Claims is reported at 360 F 2d 619 (1966). (Appendix A.)

JURISDICTION

The jurisdiction of the Court is invoked under the provisions of 28 U.S.C.A. 1255.

The Court of Claims decided the case on May 13, 1966.

QUESTIONS PRESENTED

I

Can the Government place the risk of design failure on the Contractor when the Government contract specifically states that the Contractor shall perform all work "in strict accordance with the specifications * * *"

II

Can the Government, by placing exculpatory language in a technical provision, vitiate the General Provisions, Article 4, Changed Conditions of Form 23 Government Contract.

III

Should a Contractor be penalized because his ingenious and novel method of construction, which was not contemplated by the parties, made it possible to construct a Government facility.

STATEMENT

The vital issue in this case is whether every contractor who enters into a government contract for hydraulic dredging services can rely on the concept of equitable adjustment

in the event changed conditions are encountered, or must he enter into the transaction on the basis of a gambling contract requiring the inclusion in his bids of large sums as a reserve against risks a contractor ordinarily does not have to bear, namely, (1) a design which cannot be constructed by the methods contemplated by the parties, or (2) changed conditions.

The decision of the Court of Claims has permitted a general caveat tucked away in a technical provision imposing upon Contractor the risk of deductions from "any cause whatsoever," to override the clear language of Article 4 of the General Provisions which calls for an equitable adjustment of the compensation where the anticipated results cannot be attained because of changed physical conditions. To permit this decision to stand will result in competent contractors avoiding government contracts, in an increase in cost of public facilities, or in bankruptcy of those contractors who rely on the concept of equitable adjustment for changed conditions which has necessarily been developed over the years to permit construction of unique and hazardous public contracts.

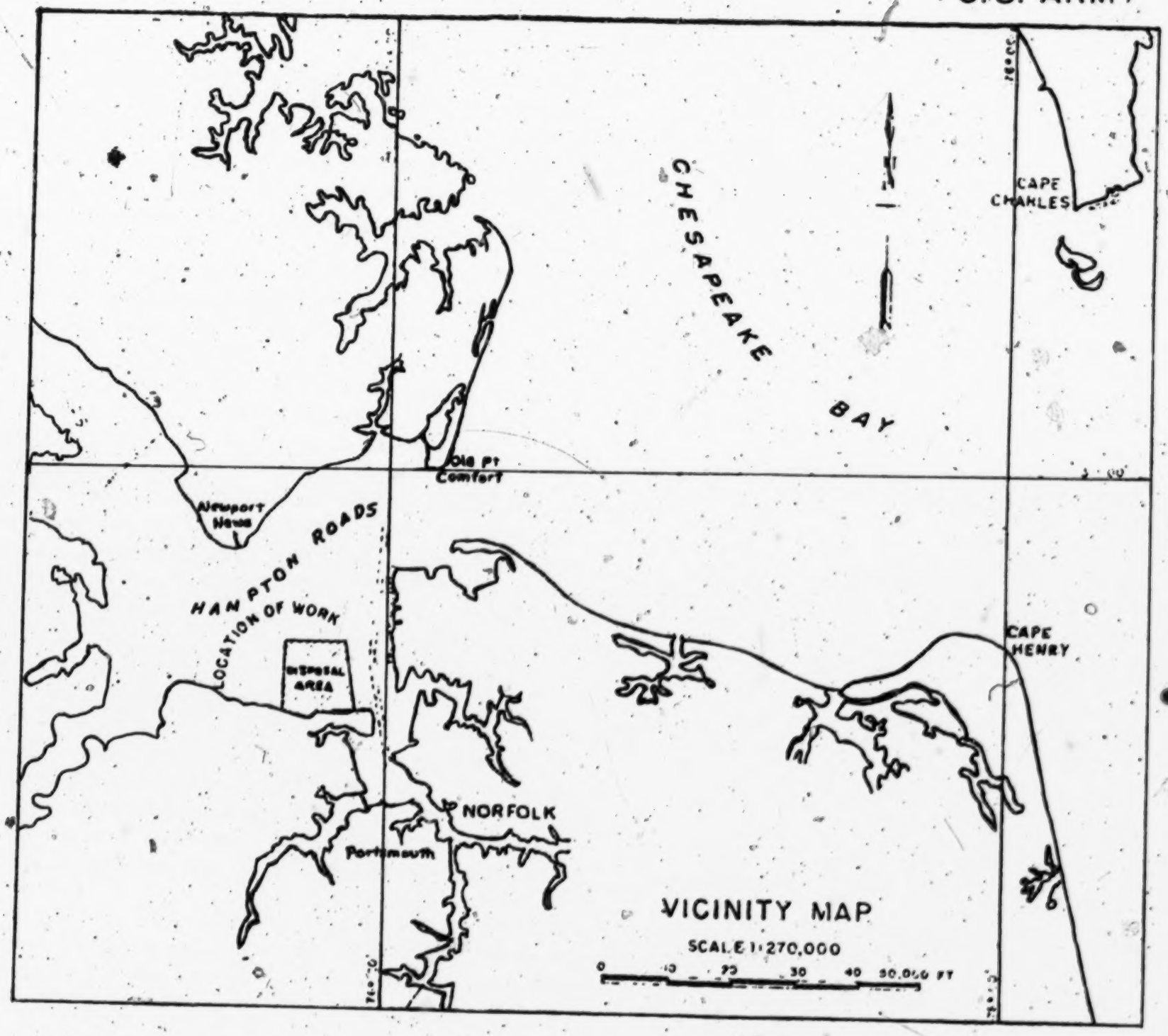
There is no disagreement in this case that the contractor sought diligently to and did perform an arduous, novel, subsurface, hydraulic dredging operation for the government. It was the years of experience and the tenacity of Contractor that made the valuable Craney Island facility a reality instead of an engineer's dream. In doing so, however, the contractor encountered unforeseen physical conditions which forced it to depart from the operating procedures specified under the contract. This change increased its costs and reduced its income. Accordingly, Contractor seeks an equitable adjustment so that it will be reasonably

and fairly compensated for providing the Government with a facility which resulted more from the Contractor's skill and ingenuity than from the Government's design.

In 1948 Congress appropriated funds for the design and subsequent construction of a disposal area situate in the tidal waters of Hampton Roads in the vicinity of Norfolk, Virginia. The United States Army Engineers were designated to design the project, advertise for bids, and supervise the construction. The concept involved a revetted retaining levee, composed of hydraulic fill pumped from designated borrow areas, extending into the waters of Hampton Roads from Craney Island in the shape of a square, each leg of which was two miles long. The general location and outline of the project is shown on the attached copy of the vicinity map included in the opinion of the Board of Contract Appeals (hereinafter referred to as the Board) at pages 1 and 2. (See BCA decision No. 1545.)

Since this was a novel undertaking, the first of its kind to be constructed in open tidal waters, the Army Engineers embarked upon a study of the project which was to cover nearly six years. Although the Engineers made an extensive investigation of the foundation and borrow material, no model of the project was constructed nor were tests conducted at the Engineers' experimental center at Vicksburg, Mississippi to determine by laboratory analysis or experiment the reaction of the fill material in tidal waters. (Tr. pp. 351 and 363.) Nevertheless, "the Government considered the slope design to be achievable under the existing conditions, i.e., the bottom, the borrow, the tidal currents and the weather." (See Opinion of the Court of Claims, hereinafter designated "Opinion," page 2.)

U.S. ARMY


CHESAPEAKE BAY
CAPE CHARLES
Old Pt Comfort
Newport News
HAMPTON ROADS
LOCATION OF WORK
DISPOSAL AREA
CAPE HENRY
NORFOLK
Portsmouth
VICINITY MAP
SCALE 1:270,000
0 10 20 30 40 50,000 FT

After the specifications had been prepared, the Government, in the Spring of 1954, advertised for bids. Prospective bidders were given only 47 days within which to prepare estimates. (Tr. p. 311.) Relying on Government sub-surface investigation and project design, six companies submitted bids and the plaintiff, being low, was awarded the contract.

This contract provided for Norfolk Dredging Company to furnish "all plant, materials, equipment, supplies, labor and transportation * * *" and to perform "all work as required by Article 1 of the contract in *strict accordance* with the specifications * * *." The hydraulic fill was to be placed along a specified center line to an elevation of plus five feet (that is, five feet above mean low water) for a width of 22 feet with a descending slope on each side of one on fifteen (1 foot of vertical build up for 15 feet of lateral surface) to the elevation of minus two feet and slopes of one on thirty to natural bottom. In water ten feet deep the levee was to be 350 feet wide on each side of the center line or a bottom width of 700 feet. The material from the designated borrow areas was to be deposited on the natural bottom by the use of parallel discharge lines or by the lateral shifting of a single discharge line. (Contract TP 1-04.a(3).) (Appendix B.) According to estimates of Government, if the material was deposited in the prescribed manner, 7,714,000 cubic yards of hydraulic fill within payment lines would be required for the construction of the levee, and subsidence along the center line would reach a minus seven feet (7 feet below natural bottom).

On July 12, 1954 the contractor received its notice to proceed. Dredging was commenced in Borrow Area C on August 19 and the hydraulic fill was deposited at station 26 + 00, moving inshore to station 00 + 00 being at the

southwestern side of Craney Island and the last station 303 + 00 being at the southeastern terminus or shore line of Craney Island. There was a hard bottom along the center line for the first 2600 feet; consequently, no subsidence was observed. But it was evident during the placement of the hydraulic fill that the material from Borrow Area C was not assuming the designed slope. (Tr. p. 34 and App. Ex. 1-A, Sheet 1.)

As fill was deposited outboard from station 26 + 00, mud waves appeared in front and on each side of the levee. It was first thought that this extremely soft bottom was small in area and the mud waves would subside. Unfortunately the mud waves continued to appear and at approximately station 33 + 00 reached tremendous proportions, rising in front of the levee from ten to twelve feet above the mean low water. The fill material sank into the soft bottom to depths of thirty to sixty feet along the center line between stations 26 + 00 to 51+ 00, and created mud waves so large that in one instance 850 pounds of dynamite had to be used in their elimination. (Tr. p. 51.)

Contractor continued his efforts to build the levee by the method described in the specifications, i.e., a single discharge line shifted laterally by bulldozer and by parallel discharge lines. (See Corps of Engineers Photographs Serial Nos. 17545 and 17546, and Tr. pp. 38-40.) Various techniques of placement by means of the specified lines were tried and all of the usual control methods (bleeders, baffles and the like) were employed from September 17 to November 29, 1954, but the bottom could not be stabilized. Several conferences between representatives of the contractor and the Corps of Engineers were held, but their combined

knowledge and experience could not produce satisfactory results by use of ordinary dredging methods. (Tr. pp. 61-62.)

Throughout the weeks of intensive effort to stabilize the bottom, the only suggestion received from the defendant was to continue dredging by the ordinary methods, but to improve control of the fill. This simply did not work and Contractor recognized the need for an entirely different approach—one which would create a floating bed upon which the levee could be built. (Tr. p. 63) Having tried every conceivable method known to the District Engineers or to the plaintiff, Contractor experimented with a floating, swinging, discharge line. Such a line had been used in the Mississippi River, but never before in tidal waters. Its use was suggested to the District Engineers at a conference on October 27, 1954, but defendant denied Contractor permission to use this floating, swinging line. (Tr. pp. 62-64.)* Contractor continued its efforts along conventional lines with no success. As Mr. A. Lee Smith put it, (Tr. p. 65):

> "I then personally approached the District Engineer. Note, this is my third try to get a floating line in, to try it. I wanted to find out if we stabilized that bottom, we could then build a levee on top and that is the theory."

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* The Court found that such permission was not denied, saying that Contractor's assertion did not overbalance the Government's denial. (Opinion, p. 4.) This holding overlooks the facts that Contractor's assertion was corroborated by notes of the October 27 conference taken by its chief engineer and vice-president, Mr. A. Lee Smith (see Exhibit 10, Appeal Assembly, note of conference of October 27, 1954, at Fort Norfolk); that of the Government's witnesses, Mr. Robins makes no comment as to such meeting and Mr. Jackson has no record of the meeting but does not deny it was held. (Tr. p. 241.)

Finally, by letter of November 30, 1954, the Army Engineers granted permission for Contractor to use the new method of placement, saying:

> "Your present proposal to discharge from a floating line to obtain a more even spread of dredged material appears to have beneficial possibilities, and I am looking forward with great interest to the results obtained under that method." (Tr. p. 67.)

This floating, swinging, discharge line was put in and "as time progressed, it was spreading the material on the bottom to give an even base." (Tr. p. 67.)

Even though Contractor finally devised a satisfactory means of depositing the materials on the designated bottom without subsidence and mud waves, it was unable to make the material assume the designed slopes. All of the various means of control (bleeders, spreaders, baffles, etc.) were used to prevent the hydraulic fill from running out above and beyond the acceptable tolerance lines, but material of the borrow areas was of such physical qualities that it would not assume the designed slope. Deductions were running so high that Contractor in its letter of February 2, 1955 (Ex. A(4)) wrote contracting officer advising him that Contractor had encountered changed conditions as contemplated under Article 4 of the General Provisions of the contract, stating "that there must have existed certain latent physical conditions at the site or else the designing engineers would not have called for slopes as shown on the plans." The letter concluded:

"It now appears impossible to produce the slopes as designed and we, therefore, respectfully request that favorable consideration be given to a change in the specifications and an adjustment in the deductions from our pay quantities."

Contracting officer denied the requested relief stating that excess materials may be reduced "by the application of more definite control measures" but without suggesting or specifying any measures that were not being used by Contractor. (Ex. A(5).)

The levee was completed by appellant within the time specified by the contract, and, according to the Government, 7,896,665 cubic yards of material were pumped by Contractor from the designated borrow areas into the levee. However, only 5,784,027 cubic yards, or 74% of the materials pumped, remained within the acceptable tolerance lines—the designated slopes—and qualified as pay yardage.

After completion of the project, the Contractor formally presented the claim to the contracting officer. (Ex. A.) The claim was denied on October 17, 1957. Nevertheless, the Board reserved to the parties the negotiation of an equitable adjustment as to compensation due the contractor because the pay yardage was nearly two million cubic yards less than was expected by the parties. The parties attempted to negotiate an adjustment for this underrun of pay quantities, but they were able to reach agreement upon only a portion of the claim. The Government agreed to, and did, pay the Contractor $75,000.00 for indirect costs attributable to the underrun of pay yardage, but refused any payment for its loss of profit nor did it compensate

Contractor for the added expense encountered in devising the floating line which was necessary to complete the project.

Petition was filed with the Court of Claims and hearings were held before Commissioner Bernhardt who filed his Opinion and Conclusions of Law on July 6, 1964. An appeal was taken to the Opinion of Commissioner to the Court of Claims. The opinion of the Court of Claims, rendered May 13, 1966, with minor exceptions adopted the opinion of the Commissioner.

REASONS FOR GRANTING THE WRIT

I

> Can the Government place the risk of design failure on the Contractor when the Government contract specifically states that the Contractor shall perform all work "in strict accordance with the specifications * * *."

If the decision of the Court of Claims is allowed to stand, the risk of design failure or faulty plans and specifications will be placed on the Contractor simply by placing a brief caveat in the specifications. (TP 1-04(4) Appendix B.)

Paragraph 1 of the General Conditions of the Government contract in issue entitled "Scope of Work" requires:

> "The work to be performed under this contract consists of * * * and performing all work as required by Article I of the Contract, *in strict accordance with the specifications* * * *" (Emphasis added, Appendix B.)

The method to be used in the performance of the work was specified in the Technical Provisions of the Specifications entitled TP 1-04 Performance of Work.

a. *Hydraulic Flling:*

(3) Placement of Fill. The hydraulic filling *shall* be conducted * * * by the use of parallel discharge lines or by lateral shifting of a single discharge line. (Appendix B.)

The mandate of the contract was clear as to the responsibility of the parties. Since the Government prescribed that the work was to be performed "in strict accordance with the specifications," it assumed the responsibility and the risks of defects in the design or in the plans and specification. The general rule is that a contractor who is required to build a facility according to plans and specifications prepared by the owner will not be responsible for design defects. The Court of Claims has deviated from this rule when it states:

At page 10:

> "The mere fact that a floating line was not specifically in the minds of the parties at the time of bidding does not discharge the *contractor's basic responsibility to achieve a prescribed end result in whatever manner the contract does not expressly prohibit.* (Emphasis added.)

* * *

And further at page 14:

> "In fact, it was the plaintiff's responsibility to employ the tool best suited to accomplish the required ends and to *assume the risk attending the undertaking.* (Emphasis added.)
>
> * * *
>
> "It (contractor) cannot now charge its underestimate of the foreseeable hazards to mispresentation by the Government that a highly unconventional job could be done in a conventional manner. Its failure to anticipate the inadequacy of conventional discharge lines for placing the hydraulic fill was an unfortunate error in judgment and *no doubt the Government mistook as well in thinking that the job could be done in this fashion. But in accepting the award of the contract, the plaintiff (contractor) undertook its completion despite the entailed risks and can escape its responsibility only upon a clearer showing of misrepresentations by the Government than it has advanced thus far, or upon proof of impossibility of performance."* (Emphasis added.)

We are not involved with a question of proof by the Contractor of impossibility of performance. The issue here is whether an adjustment in compensation should be granted because the contract could not be performed in accordance with the plans and specifications. Although the Government and the Court of Claims agree that the contract could not be performed, nor could the desired results be attained by using the methods prescribed by the plans and specifications, the risk of the faulty design was wrongly placed on the Contractor.

The decision below is in conflict with the elementary principle of law that the Government has the responsibility for the design of a project and the preparation of workable plans and specifications. In *United States* v. *Spearin*, 248 U.S. 132 (1918), the contractor had agreed with the government to build a drydock according to plans and specifications. *Inter alia* the contract provided for reconstructing a sewer which intersected the site. However, because of an unknown dam in the sewer, water backed up and flooded the drydock. In discussing the responsibilities of the parties for such a condition, Justice Brandeis said:

At page 136:

> "But if the Contractor is bound to build according to plans and specifications prepared by the owner, the Contractor will not be responsible for the consequences of defects in the plans and specifications. (Citing authorities.)

And further at page 137:

> "But the insertion of the Articles prescribing the character, dimensions and location of the sewer imparted a warranty that, if the specifications were complied with, the sewer would be adequate. This implied warranty is not overcome by the general clauses requiring the contractor to examine the site, to check up on the plans, and to assume responsibilities for the work until completion and acceptance. * * * The duty to check plans did not impose the obligation to pass upon their adequacy to accomplish the purpose in view."

The Court of Claims has reversed the burden posed by this law. It states at page 14:

> "The implication construed from the specifications but not affirmatively stated therein, was that the bottom would hold the levee if the hydraulic fill provided by the Government was placed by conventional methods, instead of which the plaintiff learned to its loss that the bottom would hold the levee if the fill were placed by a floating line."

The Circuit Courts generally follow the principle enunciated in *United States* v. *Spearin*, supra, thus placing them in conflict with the rule adopted by the Court of Claims. In discussing the applicable rule, Chief Judge Murrah, in *Kansas Turnpike Authority* v. *Abramson*, 275 F 2d 711 (10th Cir. 1960), stated:

At page 713:

> "When the principal object of the contract is to obtain a result * * * the risk of accomplishing such purpose or result is on the builder. (Citing authority.) Where, however, the contract provides for the performance of a given undertaking in accordance with prescribed plans and specification, this rule does not apply, because the contractor is not permitted to vary from the prescribed plans and specifications 'even if he deems them improper and insufficient; and therefore cannot be held to guarantee that work performed as required by them will be free from defects, or withstand the action of the elements, or accomplish the purpose intended.'"

See also *Bradford Buildings, Inc.* v. *Sears, Roebuck & Co.*, 270 F 2d 649 (5th Cir. 1959) where the court quoted with approval the rule of *United States* v. *Spearin, supra,* and *Fehlhaber* v. *United States,* 151 F Supp. 817, 825; 138 Ct. Cl. 571, Cert. Den. 355 U. S. 877 (1957), where the court said at page 825:

> Plaintiff has a right to rely on the Government's specifications and drawings and the Government is bound by any assertions made therein notwithstanding the fact that it was stated that that data would be for information only. Moreover, this court has repeatedly held that the specifications cannot alter the effect of the specific language of the changed condition section of the contract." (Citing authorities.)

Although it is generally agreed that it was impossible to construct the levee in accordance with the methods prescribed in the specifications (Tr. 104a) and the floating discharge line was "most ingenious and effective," the Court of Claims has placed the loss for this inherent defect in the specifications on the Contractor. The Government, in prescribing the method to be used in constructing the facility, in essence warranted that if the method was followed, the desired result would be achieved.

It is not a question of bad faith mispresentation by the Government, but a good faith error in the design data, and in the anticipated result from using conventional methods in constructing what proved to be an extremely unusual and novel project. Through the resourcefulness and untiring efforts and ingenuity of the Contractor, the facility was completed. However, the expense for the error of the design engineers, who had six years to plan the project, has

been placed upon the Contractor. A contract which the parties believed to be capable of conservative bidding proved to be different from that contemplated by all parties who were concerned with it. Consequently, it became a gambling venture with all risks being placed upon the Contractor.

II

Can the Government, by placing exculpatory language in a technical provision, vitiate the General Provisions, Changed Conditions, Article 4, Standard Form 23 Government Contract.

The Changed Conditions Article (Appendix B) provides for an equitable adjustment when the Contractor encounters (1) subsurface or latent physical conditions at the site differing materially from those indicated in the contract, or (2) unknown physical conditions at the site of an unusual nature differing materially from those ordinarily encountered and generally recognizable as inhering in work of the character provided for in the contract. It is this provision that has traditionally been inserted in government contracts to give relief to those contractors who encounter unknown physical conditions or those that were not contemplated by the parties at the time of signing the contract. It is a basic policy that government contracts should not be speculative but should be capable of being bid conservatively. Thus, the Contractor could rely upon the contract plans and specifications as being in the nature of a warranty, and the Government would obtain the advantage of the best competitive bid. If, because of some unforeseen physical condition, the contractor is unable to perform in the manner prescribed by the contract, he could look to the

Changed Conditions clause for relief. The uncertainty of performing a contract, i.e., encountered in this case, was sought to be, and was effectively avoided by means of the equitable adjustments. This basic principle was summarized in *Peter Kiewit Sons Co.* v. *United States,* 109 Ct. Cl. 517, where the Court stated the general rule:

> "Both the Government and the plaintiffs entered into the contract in the belief that the amounts of the different types of excavation were approximately as estimated. If they did so, the contract was not intended by the Government to be speculative, as the War Department Board of Contract Appeals said, but was perfectly capable of being computed and bid conservatively. It was obvious that, a composite bid being required, a great variation in the proportion of the different types of excavation would be ruinous to the contractor or would cause the Government to pay far more than the work was worth. We have no reason to suppose that the Government intends to make its contracts on any such irrational basis. If, as alleged, the parties believed that the estimated proportions of the different kinds of excavation would prove out in the performance, it would appear that they would not have made the contract which they did make except for their mistake as to the facts. Such a mistake calls for a reformation, in equity, of the contract."

The same general rule should apply in this case where both the Government and the Contractor entered into a contract with the understanding (1) that 7,714,000 cubic yards of borrow material would be required to construct the designed levee, (2) that the designated site would support

the levee foundation, (3) that the material could be placed on the levee site by the conventional dredging methods prescribed in the specifications as a single discharge line shifted laterally or by parallel discharge lines. Whereas, it is conceded that only 5,784,027 cubic yards of material remained within the designed limits of the levee, that the designed site would not support the levee foundation when the material was placed in the prescribed manner. The Government was in error not only in the design quantity estimates by about 2,000,000 cubic yards, but contemplated and prescribed a method of construction that would not and could not attain the desired result. The facts and law support the conclusion that under such circumstances the Contractor encountered changed conditions and should be granted an equitable adjustment. However, the Court has summarily discarded the general rules, saying:

> "The provisions of the contract in suit whereunder the plaintiff (contractor) voluntarily assumed the cost of excessive deductions *from any causes whatsoever* * * * differentiate the present claim from any exception to the general rule. Because of these same provisions, the plaintiff can derive no help from the type of argument successfully employed in Paccon, Inc. ASBCA 7643, 62 BCA 3546 (1962). (Opinion p. 25.)

> "The mere fact that a floating line was not specifically in the minds of the parties at the time of bidding does not discharge the Contractor's basic responsibility to achieve *a prescribed end result in whatever manner* the contractor does not expressly prohibit." (Opinion p. 10.)

It is unusual that the Court of Claims would depart from the rules it so aptly expressed in *Fehlhaber* v. *United States, supra,* to the effect:

> "It would have been a virtual impossibility, however, for any bidder to make its own boring, analyze them, compute, compare and submit its bid after the Invitation for Bids was first published, since there was only a forty-day interval between that publication and the opening of bids. * * * Therefore, we hold that because of the inability of the plaintiff to bore, analyze the borings, and to compute, compare, and submit its bid within the short time allotted, plaintiff is not bound by the caveatory and exculpatory provisions of the contract and specifications and, conversely, those provisions do not relieve the defendant of liability for changed conditions as the broad language thereof would seem to indicate. Plaintiff has a right to rely on the Government's specifications and drawings and the Government is bound by any assertions made therein notwithstanding the fact that it was stated that the data would be for information only. *Moreover, this court has repeatedly held that the specifications cannot alter the effect of the specific language of the changed conditions section of the contract.* (Emphasis added.)

The Court of Claims was more emphatic in *Kaiser Industries Corporation* v. *United States,* Ct. Cl. 488-59, 340 F 2d 322 (1965) where the contractor sought an equitable adjustment for unusual subsurface conditions amounting to changed conditions when it discovered during the course of the job that it could not obtain satisfactory rock from one of two quarries approved by the Government. As the court found:

> "* * * Although it was originally reasonable to assume waste of approximately 15-20 per cent, plaintiff's waste was over 60 per cent * * *." (Slip op. p. 3, 340 F2 324.)

The Government defended on the ground that its designation of the quarry was not a guarantee; and that the contract contained general exculpatory language to the effect that (a) approval of the quarry was not approval of all rock from the quarry, (b) the Government did not guarantee that all material would be satisfactory and (c) unsound rock would be rejected. In rejecting this defense, the court said:

> "Such general caveatory language * * * cannot serve to deprive Article 4 of all force and effect or to negative completely the favorable 'indications' inherent in other parts of the contract specifications and drawings. * * *."

> "Thus, says defendant, 'approval' meant nothing more than permission to use, without any obligation on defendant's part as to what the contractor would find. In this manner, defendant would in effect read Article 4 out of the contract entirely insofar as quarry sources or operations are concerned. Manifestly, this would not be proper. *Loftis* v. *United States,* 110 Ct. Cl. 551, 628, 76 F. Supp. 816 (1948). The quarry sources were an integral part of the contract, there were no known suitable quarries in this part of the country other than the two Government-owned ones, the Government went to considerable trouble to take core borings from both of them which were made available to bidders, it made logs of the borings which were incorporated in Sheet 12 and it made, as shown, various other statements about

quarry sources. The very heart of this undertaking was the obtaining of suitable rock in a reasonably economical manner from a satisfactory quarry. It would be illogical to conclude that Article 4, specifically addressed to subsurface conditions, was inapplicable to the only part of the project that involved such operations. *The very purpose of Article 4 is to prevent bidders from adding high contingency factors to protect themselves against unusual conditions discovered while excavating, for obviously no one can ever know with certainty what will be found during subsurface operations.* The article is thus expressly designed to take at least some of the gamble out of subsurface operations. Defendant's attempt to divest itself of all contract responsibility with respect to these subsurface quarry conditions and to throw the entire risk thereof upon the contractor, including even the risk of total quarry failure, cannot, in view of the retention of Article 4 in the contract, be sustained. As the court stated in *Loftis* v. *United States,* supra, where the defendant too, by reason of a specification provision, took the position that the claimant, 'assumed the risk of encountering unstable subsurface conditions * * *,' this 'argument of defendant might be justified if we could ignore the fact that the contract, and of necessity the specifications, also contained Article 4. *The purpose of specifications and drawings is to supplement the formal contract by delineating the details of the work to be performed thereunder and not to avoid an express provision written into the contract.' * * *.*"

(Slip. op., pages 10 & 11, 340 F 2 329-30.)

Now let us analyze the contract in question. It provided for a subsurface levee to be constructed on a specific site by the method prescribed by the specifications. The specifications go further and state that if the levee is constructed in the manner prescribed, the Contractor will be responsible for the deductions that may result from "any * * * causes whatsoever." (Appendix B.) However, we find that the site selected by the Government did not accommodate the levee when it was constructed in the manner set forth in the specifications, and that the facility desired by the Government could be constructed only after the Contractor devised a method of construction now known or contemplated by the parties.

Thus the contract which was performed was an entirely different contract from the one signed by the parties because the site selected by the Government would not support the levee, and the method for placement of fill set forth in the specifications could not be used. Consequently, the penalty imposed by the language of the specifications placing responsibility on the Contractor for the deductions resulting from "any * * * causes whatsoever" is not applicable to the unknown conditions that were encountered.

III

Should a Contractor be penalized because his ingenious and novel method of construction, which was not contemplated by the parties, made it possible to construct a Government facility.

The court has gone so far as to hold that the use of the swinging, floating, discharge line "was most ingenious and effective" (Opinion p. 9), and that such was not contemplated by the parties when they signed the contract.

> "Neither the plaintiff, the defendant nor other bidders on the contract in suit contemplated the use of such a device in doing the work, but rather all concerned anticipated the use of conventional dredging and filling methods. * * *." (Opinion p. 9.)

However, it has failed to recognize that the cost estimates used by the plaintiff in preparing its bid did not cover the expense of constructing and using the floating line method and that the agreed rate of pay for yardage placed on the levee did not fairly compensate the plaintiff for the job.

The Government admits that the actual pay yardage was nearly two million cubic yards less than the estimate stated in the contract. It accordingly must concede that the Contractor was paid nearly a half million dollars less than it expected to receive because of the reduction in pay quantities. (Not to mention reimbursement for added, unexpected costs.) It must also concede that it acquired the levee it had designed and that approximately the same gross yardage was dredged to build the levee as was anticipated by the parties when the contract was signed Although the Contractor had to move approximately the same amount of material as the parties to the contract contemplated, it was paid some half million dollars less for its work than was set aside for the facility.

Fairly, then, the work should have been done for a higher cubic yard price. This was recognized by the Government (although the instant claim is denied), when

it issued a change order for an additional spur. (See Change Order #12.) There the agreed price per cubic yard was 38¢ for one part of the work and 50¢ for another portion, as opposed to the 26¢ rate in the original contract. These prices reasonably adjusted the pay to compensate Contractor fairly for his work under the changed conditions which had been encountered.

In refusing an equitable adjustment of this unbalanced situation, the Government contends that changed conditions did not exist. To give such an argument plausibility, the Government should explain why there was a shortage of pay yardage and persuade this court that the ingenious dredging method was prescribed by the contract. Otherwise, Government contractors will be penalized for using their ingenuity to complete facilities on which the design criteria has proved to be inadequate or faulty.

CONCLUSION

The ruling by the Court of Claims is in conflict with the decisions of this Court and of the Circuit Courts, and deprives the Contractor of the traditional remedy provided under the Changed Conditions Article of a Government contract.

Respectfully submitted,

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APPENDIX A

THE UNITED STATES COURT OF CLAIMS

No. 375-61

(Decided May 13, 1966)

NORFOLK DREDGING COMPANY,

v.

THE UNITED STATES

Francis N. Crenshaw, for plaintiff. Guilford D. Ware, attorney of record. Baird, Crenshaw & Lanning; Kirlin, Campbell & Keating, and Robert E. Kline, Jr., of counsel. Herman Wolkinson, with whom was Assistant Attorney General John W. Douglas, for defendant.

Before COWEN, Chief Judge, LARAMORE, DURFEE, DAVIS and COLLINS, Judges.

OPINION

PER CURIAM*

Through the medium of an assignment of errors[1] the plaintiff asks the court to find that a decision of the Corps of Engineers Board of Contract Appeals was arbitrary, capricious, or not supported by substantial evidence in eight partially overlapping particulars. The dispute involves the

* This opinion is based, with changes and added discussion, on the opinion prepared, at the direction of the court, by Trial Commissioner C. Murray Bernhardt.

[1] A procedure not affirmatively sanctioned by the Rules of Court but adopted as a practical and permissible means of defining errors in the administrative proceedings for purposes of judicial review. In this instance it was ordered over the objection of plaintiff, which demanded a *de novo* trial. The administrative record proved to be deficient in non-vital respects, although adequate for review purposes.

plaintiff's 1954 contract to build the Craney Island Disposal Area at Hampton Roads, Virginia, consisting of six miles of revetted retaining levee, three sluiceways, and an access road. The levee was constructed of hydraulic fill pumped from adjacent borrow areas designated and owned by the Government. It confines a two-mile square body of tidal water by two parallel levee legs extending north from the Craney Island shoreline two miles and linked at the north end by a third two-mile leg. The project was unique because of its size and its situs in tidal waters. It had been authorized by statute in 1948 and in the intervening years the design was perfected, extensive foundation investigations were made, and the borrow areas were located and analyzed.

The borrow material was to be deposited in such a way as to achieve certain cross-section levee dimensions prescribed by the specifications. In general, the cross-section shape was a shallow cone or inverted V rising from a broad base to a narrowed width of 150′ at the level of mean low water (MLW) and having a crest elevation of + 5′ MLW, exclusive of the roadway on top. The side slopes were to follow designated gentle angles from crest to bottom with plus and minus tolerances. The Government considered the slope design to be achievable under the existing conditions, i.e., the bottom, the borrow, the tidal currents, and the weather. The base ranged in width from 210′ in water 2′ deep to 940′ in water 14′ deep; the deeper the water the broader the base. The levee was to be revetted with riprap down to — 1′ MLW and topped by a paved roadway.

The Government estimated that the levee would require 7,714,000 cubic yards of hydraulic fill for the placement of which plaintiff was to be paid at the unit price of $0.26 per yard removed from and measured at the borrow areas, with the provision that "Any material lying above or beyond the plus tolerances on the drawings will be deducted as excess material." In other words, the plaintiff was not to be paid

for misplaced fill, except that which deposited beyond the lateral extremities of the base.

The contract was awarded June 28, 1954 and was completed May 31, 1957, with the benefit of time extensions. On August 19, 1954, the plaintiff commenced placing fill at station 26[2] and by August 26 had completed the 2,600 feet of fill from that point southward to the shoreline. Little difficulty was encountered in that segment for the water was shallow (2′ maximum depth) and the bottom was a sand shelf offering firm support for the fill. However, the deductions for fill material beyond the pay limits of the slopes averaged 3,148 cubic yards per 100-foot station. Whether this was the result of plaintiff's failure to control dispersion of the fill, or the result of a hurricane cannot be determined.

The fill was pumped from the borrow areas by pumps mounted on dredges and thence conveyed by a large diameter pipeline to the site. The method of procedure was to place a single pipeline, or double and even triple parallel pipelines, on the first stage of levee built above water and to add pipe in 50-foot lengths as the fill built up ahead of the discharge end of the pipeline. This is a normal procedure and is commonly referred to as a "fixed shore pipeline".

Starting at station 26 on August 26, plaintiff began placing fill northwardly along the west leg of the levee by discharging borrow from the pipeline lying on the levee already raised above water in the manner stated. Progress was good until about station 30, when the sand or shelf bottom gave way to a bottom of fine, soft marine clay in water about ten feet deep which was more exposed to tides and currents. Settlement or penetration of the hydraulic fill into the soft bed of marine clay was experienced to depths

[2] The levee was divided into 100-foot segments for locational purposes, starting with station 0.00 at the shore end of the western leg and proceeding clockwise to station 303/90 at the shore end of the eastern leg. Accordingly, station 26 was 2,600′ from the shore end of the western leg.

of around 30 feet, displacing and upheaving the bottom in large "mud waves" surrounding the point of discharge. The levee advanced from stations 30 to 38 during September, to station 44 by the end of October and to about 51 by November 29, 1954, accompanied by the mud wave formation. Progress was also impeded during this period by hurricane Hazel which struck the area in October, delaying and damaging the work.

The average deduction per station from 26 to 51 was 12,656 cubic yards. The settlement of fill into the soft bottom and the deductions from pay quantities were considered excessive by both the contractor and the Government. The contractor complained of the losses in pumping nonpay yardage and the Government complained of the possible exhaustion of suitable borrow from the approved borrow areas and the hindrance to progress in wasted pumping.

These matters were the subject of several informal conferences from September 18 to early November, during which some curative expedients were discussed, including a proposal by the contractor to spread a foundation bed of fill across the levee sections more evenly by discharging from a pipeline floating on pontoons and constantly swinging back and forth across a wider portion of the levee section that was possible from a shore pipeline. This method was called the floating, swinging pipeline in distinction to the shore pipeline lying upon the levee.

The plaintiff believed at the time that it was the first to conceive the use of a floating pipe on such work, and contends that the Government personnel rejected it three times as being too radical and not in conformance with the specifications. The Government denies that the floating pipeline was novel, having been used for years in building levees on the Mississippi River and less frequently elsewhere, but admits that its employment on a levee of this magnitude in open tidal waters was unprecedented to its knowledge; and

the Government also denies having initially rejected a floating pipeline as violative of the contract requirements, or for any other reason. Plaintiff's assertion does not outweigh defendant's denial.

On November 12, 1954, the contracting officer wrote plaintiff that while placement of hydraulic fill from stations 26 to zero was satisfactory, the results obtained in recent weeks were not, "in that the material removed from the borrow pit is not being adequately dispersed on the levee section." He, therefore, directed the contractor to find and put into effect "proper corrective methods" to "spread the material," on pain of suspension of the work.

Plaintiff replied on November 23, reciting its use of bleeder pipes, spoons, baffles, and single and parallel discharge lines to control the placement of fill from station 26 north, all of which are conventional methods or devices mentioned in the specifications. It said that the Government representatives on the job had instructed plaintiff to continue in this manner. It then advised that a floating discharge line was ready for use and should secure better results in the depositing of the fill material.

The floating line was put into operation at station 51 on November 29, 1954. The excessive settlement of fill with cansequent mud wave formation immediately ceased. With a few minor exceptions the settlement of fill into the marine clay bottoms was contained within three feet, and averaged 2.8 feet for the remaining five miles of levee as against plaintiff's expectation of a seven-foot average settlement. The Government's design data actually indicated an average three-foot settlement in marine clay bottoms, and a seven-foot settlement over the 22 year life expectancy of the levee project. But the contractor states it understood from a pre-bidding conference that the seven-foot settlement would occur during the 790-day period of construction.

Average deductions of fill measured above and beyond the tolerance limits fell to 3,952 cubic yards per station, and

as low as 811 cubic yards, between stations 51 to 121 in water from 10 to 13 feet deep. From station 51 to completion at station 303 the levee fill was placed principally by a combination of floating and shore pipelines in a manner hereinafter described, and without delay, so that the levee was completed in the scheduled time, as extended for extra or supplemental work and the occurrence of some severe hurricanes and storms.

Deductions for nonpay quantities, however, rose to an average of 7,943 cubic yards from stations 121 to 303 and totaled 2,112,638 cubic yards for the entire levee. This quantity, subtracted from the total of 7,896,665 cubic yards removed from the borrow areas, left only 5,784,027 cubic yards within the pay lines along the plus tolerance slopes and across the bottom of the levee sections as defined by the contract specifications and drawings, or 1,929,973 less than the estimated pay quantity of 7,714,000 cubic yards.

The plaintiff first drew formal notice to the alleged excessive deductions for nonpay quantities in a letter of February 2, 1955, in which it stated that since use of the floating pipeline began on November 29 the rate of levee placement had greatly improved and had then covered a distance of 1,200 feet; however, while the volume of material pumped from the borrow area was quite close to the estimated volume, the side slopes of the levee were above the design elevations, or plus tolerances, resulting in excessive deductions for nonpay quantities of fill. Plaintiff, therefore, felt that "there must have existed certain latent physical conditions at the site or else the designing engineers would not have called for slopes as shown on the plans." Consequently, it asked that favorable consideration be given to "a change in the specifications and an adjustment in the deductions from our pay quantities."

The contracting officer replied on February 11, 1955, acknowledging receipt of plaintiff's request for "a change in the specifications." He evidently understood it to be a re-

quest for a change in pay provisions under the Changes clause of the contract, rather than a request for relief under the Changed Conditions clause, which does not require a change in the contract specifications. He accordingly advised that the specifications as written provide for the deductions made, and that the deductions were due to the placement methods previously employed by plaintiff. He also said that the deductions had been materially reduced by recent changes in the placement method which were still within the scope of the specifications. Further reductions were possible, he believed, through more definite control measures by plaintiff.

The project proceeded to completion on May 31, 1957, without further protest or complaint by plaintiff as to the deductions or to any latent physical conditions. On July 18, 1957, plaintiff wrote to the Government referring to its letter of February 2, 1955, and filed a claim for changed conditions, based on certain "logical conclusions" consisting briefly of these points:

(a) It was *impossible* to construct the levee north of station 30 to contract dimensions solely by the specified fixed shore pipelines because of excessive settlement of the soft bottom and consequent mud waves.

(b) The floating discharge pipeline (which plaintiff alleged was held by the Government to be prohibited by paragraph TP1–04a(3) of the specifications) was, therefore, the "only feasible and practicable means of placing the initial fill in a manner to prevent excessive settlement and mud waves", but "caused the fine materials from the borrow pit areas to be dispersed in solution and deposited in large quantities over great distances outside the allowable slopes of the finished levee."

(c) The data shown on the contract plans as to composition of the materials in the borrow areas were in error because, based on plaintiff's many years of experience, materials as shown would have stayed in solution for only

a short time and would then assume slopes not to exceed 1 on 10 (slightly steeper than specification requirements) without traveling distances up to 2,000 feet.

(d) The floating discharge line saved the Government approximately 2,000,000 cubic yards in pay quantities of fill from the advertised estimate of 7,714,000 yards.

The plaintiff concluded its letter of July 18, 1957 by requesting the additional payment of approximately $600,000 for changed conditions, the amount representing (a) an adjustment in the contract unit price for materials paid for, or payment for the deducted yardage at the contract unit price, plus (b) payment on an hourly basis for lost time of the dredge and its attendant plant resulting from use of the floating discharge line, both items being subject to negotiation.

On September 17, 1957, the plaintiff refined its claim to the contracting officer by basing it one three changed conditions: misrepresentation of borrow material, misrepresentation of bottom material, and inadequacy of specified construction methods. On October 17, 1957, the contracting officer denied the claim and ruled that changed conditions did not exist, citing supporting details. The plaintiff duly appealed, and on December 21, 1959, after an extensive hearing and submission of exhibits and briefs, the Corps of Engineers Board of Contract Appeals denied the appeal, reserving, however, for equitable adjustment between the parties the plaintiff's claim for quantity variation. On June 6, 1961, the plaintiff accepted $75,000 under Modification No. 20 as an equitable adjustment for the underrun in pay quantities of fill.[3] It then filed the instant petition on September 20, 1961.

The eight errors attributed to the Board will now be discussed in somewhat the order of their listing by plaintiff:

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[3] 1,929,933 cubic yards, or the difference between 7,714,000 yards which the Government had estimated the levee would require and the 5,784,027 yards actually deposited within the pay lines.

1. The Board found that the floating pipeline devised by the plaintiff did not constitute a changed condition because it was embraced by the terms of the specifications, and plaintiff realized major savings by its use. The plaintiff cites this as erroneous. Specification TP1–04a(4) provides:

> The hydraulic filling shall be conducted in such a manner as to achieve a gradual building up of the base of the fill by the use of parallel discharge lines or by lateral shifting of a single discharge line. In no case shall the levee be pumped to full height with steep side slopes and allowed to slump. * * *

The Board found, and we concur, that there is nothing in this or any other provision of the contract which prohibits, provides or mentions whether the single or parallel discharge lines shall be shore pipe or floating pipe.

The evidence shows that the floating discharge pipe consists of several (up to 10) 50-feet lengths of 22-inch pipeline with bell joints permitting lateral motion of each joint, resting on pontoons in the water in front of the levee already built, and equipped with a baffle device at the mouth of the discharge end to stop the forward thrust of the discharge and providing a means of steering or swinging the floating line from one side of the levee fill to the other.

There is nothing in any component of the floating line that is unusual to ordinary pipeline dredging. The pipe is the same 22-inch type ordinarily used. The pontoons on which it rests are the same which customarily carry pipelines over water. The baffle is mentioned in the contract specifications in TP1–04. Performance of Work. (2) *Control measures,* reading in part: "The Contractor shall use bleeder pipes, spoons, *baffles,* or *other devices* during the placing of the hydraulic fill in order to avoid excessive wash of the levees during the filling process." (Italic added.)

We agree that the contract language does not specify how the parallel or single discharge pipeline shall be supported or

shifted, or whether the joints shall be flexible or rigid. "Shore" pipeline is no more indicated than the floating pipeline; nor for that matter, a pipeline supported on wooden cribs or bents, which is a third means of support the contractor used at will in placing hydraulic fill and which is neither "shore" nor floating.

We further agree that the floating pipeline is a means or "device" for supporting the fill conduit and does not constitute a change or an unknown or latent physical condition existing at the site within the definition of the changed condition article.

The difficulty experienced by plaintiff in placing the hydraulic fill between stations 30 and 51 with a conventional fixed shore pipeline system has been described. Even though the position of the discharge end of the line may have been moved every 15 or 20 minutes as plaintiff asserts, and even though conventional attachments such as bleeders, baffles and spoons were used to diffuse the fill as it was pumped into the levee site, the concentrated impact of the heavy fill plummeting down on the soft estuarial bottom of Hampton Roads caused the fill to sink into the ooze for as deep as 50 feet and in so doing displaced the latter and caused it to rise up above the prescribed slope elevations on either side in "mud waves". It was imperative to devise a more effective method of gradual distribution of the fill so as to minimize the disturbance to the bottom material. The plaintiff's answer to the problem in the form of a swinging floating discharge line was most ingenious and effective. The floating line consisted of several (up to 10) 50-foot lengths of 22-inch pipeline with bell joints permitting lateral motion of each joint, resting on pontoons in the water in front of the levee already built, and equipped with a baffle device at the mouth of the discharge end to stop the forward thrust of the discharge and providing a means of steering or swinging the floating lines from one side of the levee fill to the other. In use it described an arc of 180° spanning a distance

of 150′ on either side of the center line of the levee, and while in motion sifted the fill material onto the levee site so gradually as to cause minimum disruption on the bottom as it came to rest.

While comparable devices had been used elsewhere under entirely different conditions (such as along the Mississippi River) and were not unknown to the dredging industry, their use in tidal waters was novel and displayed considerable resourcefulness on plaintiff's part. Neither the plaintiff, the defendant, nor other bidders on the contract in suit contemplated the use of such a device in doing the work, but rather all concerned anticipated the use of conventional dredging and filling methods. Undoubtedly, the framers of the quoted specification provision had in mind only the conventional devices first employed by the plaintiff, although the specification language was broad enough by description to cover the floating line. The basic disagreement seems to be that the plaintiff construes the quoted specification as a *direction* to employ only conventional equipment to achieve a gradual building up of the levee with hydraulic fill (as if it were to prohibit a novel method), or as a warranty that the desired result could be attained by use of conventional equipment, while the defendant construes it as requiring only a gradual deposition of the fill by whatever arrangement of discharge lines the contractor might dream best. There is more merit to the Government's view. Freedom of choice of means is indicated by the phrase "in such a manner", and this freedom is reenforced by the terms of Specification TP1-04a(2), which directs the contractor to use "bleeder pipes, spoons, baffles, *or other devices*" to avoid excessive wash. Before the quoted specification can be read as restrictively as plaintiff suggests it must contain a clear prohibition against the use of any device other than those enumerated in its text and of course in this case the language used was broad enough to embrace the floating line devised by plaintiff. The mere fact that a floating line was

not *specifically* in the minds of the parties at the time of bidding does not discharge the contractor's basic responsibility to achieve *a prescribed end result* in whatever manner the contract does not expressly prohibit. In engaging the services of professional levee builders through the bid process the Government acquires a reservoir of developed skills as an important part of the consideration, for as in every industry or profession a background of extensive experience is an indispensable asset in coping with contingencies. The result might be different if the only reason that conventional equipment could not accomplish the required result was that the borrow material or the bottom conditions at the levee site were so radically different from what the Government represented them to be that they compelled the use of a method of depositing the fill which was a substantial departure from the methods reasonably contemplated, but then the changed conditions would relate to other parts of the contract and not to Specification TPI-04a(3).

In this connection the plaintiff says that the Board erred in finding that the plaintiff realized major savings by using the floating line because the bottom settled or consolidated on the average of only three feet instead of seven feet expected by the plaintiff. Perhaps what the Board had in mind was that part of Specification TP1-04a(4) which would charge the contractor for excess material lying above or beyond the pay lines whether it was the result of "wash due to normal pumping operations [or] mud waves which are beyond the control of the contractor or any other causes whatsoever with the exception of submarine sand bars." If plaintiff had continued to use conventional discharge methods and to experience mud waves which rose up beyond the levee pay lines, it would have suffered heavy deductions as it did between stations 30 and 51. However, by using a floating line the plaintiff reduced the bottom subsidence to three feet as opposed to an anticipated seven feet and an actual

(in some cases) 50 feet.[4] All fill material which plaintiff removed from the borrow areas and which sank into the bottom within the lateral limits of the levee would be paid for because it would lie within pay lines. To an unascertainable extent the fill thus sinking into the bottom and entitling plaintiff to payment would displace bottom material which would surge above the pay lines in the form of mud waves and so cause deductions to be charged against the plaintiff, thus in effect offsetting some if not all of the credit. The potential credits and debits in this exchange constitute a speculative standoff, and the Board erred in ascribing "major savings" to the plaintiff in the outcome. The error, however, did not affect the ultimate ruling of the Board but merely made it more palatable.

2. The plaintiff next contends that the Board erred in finding that it would have been possible for plaintiff to construct the levee using a conventional shore pipeline despite the soft bottoms encountered and the consequent mud wave formations. The basis of this finding by the Board was that from November 14 to 29, 1954, the plaintiff placed 300 feet of levee from about stations 48 to 51, using conventional shore discharge lines, and had deductions (i.e., deductions from fill pumped for fill landing outside the pay lines) of about 3,500 yards per station as compared with deductions averaging over 12,000 yards per station which the plaintiff experienced from stations 30 to at least 48. The deduction volume of 3,500 yards per station said to have been experienced from stations 48 to 51 was about the same as the deduction volume experienced in the first 30 stations on hard sand bottoms when comparatively small average deductions were experienced and before changed conditions were claimed. From this the Board concluded that it was not impossible to construct the levee using conventional discharge

[4] The seven feet was the Government's subsidence expectation over the life of the levee. The 50 feet was below the normal bottom, or about 60 feet below MLW.

lines, as plaintiff had claimed, thus inferring that the conventional lines would do the job if properly controlled. The plaintiff contends that the exhibit relied upon by the Board for the stated conclusion does not support the finding, in that the exhibit shows that at station 50 the deductions totaled approximately 10,000 yards, or close to the plaintiff's experience for the stretch of levee from stations 30 to 48, and much more than the plaintiff's deductions for the first 30 stations.

Even assuming the Government's contention that deductions at one or two of the stations between 30 and 51, while plaintiff was employing conventional discharge lines, averaged 3,500 yards per station, this reduction could as readily be attributed to brief appearance of a hard bottom at those locations, or perhaps to some other cause, as to a sudden improvement in the plaintiff's control technique which proved the adequacy of conventional methods. Such a reduction decrease might be attributable to other factors not suggested by the parties. The brief episodes of sudden improvement, even if verified, would not establish the proposition that it would have been possible to construct the levee using conventional discharge lines in any locations where the bottom was primarily composed of soft marine clay in substantial depth. The plaintiff's dramatic failure to do so in the segment of levee between stations 30 and 48, despite its strenuous efforts, rather conclusively demonstrated this impossibility. The Board's contrary conclusion rests upon such slender evidence as to lack substantial support. Even though the Board was in error in this conclusion as to impossibility, it is not decisive in the case because the plaintiff was not confined to the use of conventional discharge lines in building the levee. We have seen in the discussion under the first assignment of error that Specification TP1-04a(3) did not prohibit the plaintiff's use of a floating line, which was not a change within the definition

of the changed condition or the changes article of the contract.

3. The plaintiff assigns its third charge of error to the finding of the Board that plaintiff had not shown or attempted to show that the bottom conditions at the levee site differed from the conditions disclosed in the contract or drawings, and that the conditions did not in fact differ. The Board's decision described the bottom conditions as follows:

> The soft nature of the Hampton Roads bottoms, except for about 3,000 feet of sandy shelf nearest Craney Island for both the east and west legs of the levee, was amply shown in the logs of borings on the contract plans. Borings Nos. 22 through 26 and 81 through 84 along the centerline of the proposed levee show that the top 100 feet, on average, was composed of marine clay. This material is largely sediment deposited in estuaries of rivers and by definition its particles will pass a 200 mesh sieve and are classified as "fines", as is silt, mud, sand or any other material which is not retained on a 200 mesh sieve. This material was so soft and "fluffy" that it was difficult to recover samples from its top few feet, which, when dry, weighed only about thirty five pounds per cubic foot compared with about 120 pounds for ordinary soil.
>
> The information as to the presence and depth of the marine clay bottom beds are plainly shown on Contract Drawing No. N-10-13-06(2). Such material is susceptible to extreme settlement or subsidence under concentrated loads. This was the reason for the language in the contract specifications, TP1-04a-3, *Placement of Fill:* "The hydraulic filling shall be conducted in such a manner as to achieve a gradual building up of the base of the fill * * *", and "In no case shall the levee be pumped to full height with steep side slopes and allowed to slump."

The plaintiff does not deny that the physical composition of the material encountered corresponded to contract description, but contends that the "holding power" of the bottom material was misrepresented by implication in the specifications. The implication, construed from the specifications but not affirmatively stated therein, was that the bottom would hold the levee if the hydraulic fill provided by the Government was placed by conventional methods, instead of which the plaintiff learned to its loss that the bottom would hold the levee only if the fill were placed by a floating line. This alleged error is merely a convoluted version of the first assignment of errors discussed above. The whole problem is that the plaintiff read the specifications as a guarantee that (a) if it placed the prescribed fill in (b) the prescribed levee areas with (c) conventional discharge lines, then the levee would automatically assume the prescribed configuration. In fact it was the plaintiff's responsibility to employ the tool *best suited* to accomplish the required ends and to assume the risks attending the undertaking. We have seen that Specification TPI1-04a(3) did not limit or intend to limit the plaintiff's choice of equipment. As an experienced operator in the dredging business and in the particular coastal area which included Hampton Roads, the plaintiff is charged with awareness of the inherent difficulties in erecting with hydraulic fill a six-mile levee into tidal waters in an area where violent storms, strong currents, and heavy seas are a common occurrence.[5] It cannot now charge its underestimate of the foreseeable hazards to misrepresentation by the Government that a highly unconventional job

[5] General Condition 3 of the contract "Site Investigation and Representations", provides in part: The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon * * * uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during the prosecution of the work * * *.

could be done in a conventional manner. Its failure to anticipate the inadequacy of conventional discharge lines for placing the hydraulic fill was an unfortunate error in judgment, and no doubt the Government mistook as well in thinking that the job could be done in this fashion. But in accepting the award of the contract the plaintiff undertook its completion despite the entailed risks, and can escape its responsibility only upon a clearer showing of misrepresentations by the Government than it has advanced thus far, or upon proof of impossibility of performance. The Board's decision on the facts involved in this assignment of errors was amply supported.

4. The subject of another of plaintiff's assignment of errors is the Board's finding that "the only variation of the [borrow] material from the consistency called for in the specifications was that it was heavier or coarser than indicated [in the contract drawings]." In its original claim letter the plaintiff complained that the borrow material was too heavy and caused the excessive bottom settlement which occurred in the area between stations 30 and 51 before use of the floating line technique commenced. At the Board hearing the plaintiff contended that the borrow material was too light and floated out of control beyond the pay limits of the levee. Despite efforts of the plaintiff to establish the contrary at the hearing, the proof did not show any substantial variance between the actual fill and its composition shown on the contract documents. In fact, in its brief to the court the plaintiff does not contend otherwise, but claims instead that the *performance* of the fill "in tidal water where it could not be controlled was *different* than the norms to be expected from the test borings." This is explained to mean that part of the borrow fill was too light and was carried by action of the water beyond the pay limits of the levee, while other parts were too heavy and so not only could not be held by the bottom when it was deposited in a conventional manner, but tended to pile up

at a steeper angle than the slope design permitted instead of leveling out at a milder angle by hydraulic action. This is an acceptable reconciliation of the plaintiff's previous ambivalence, but does not support the charge of Board error. The plaintiff had available as much information concerning the composition of the material in the borrow areas as the Government, since the knowledge of each was derived from boring logs and laboratory analyses of core borings, the results of which were accurately depicted in contract drawings. The Government specifically did not guarantee that materials other than those shown by the borrow area borings would not be encountered, or that the materials would not vary from those indicated, and warned that the depths of strata in the borrow areas shown by borings was only approximate. See Specification TP1-03, Materials.

The plaintiff's experience in building levees with hydraulic fill was presumably as extensive as that of the Government engineers who planned the project, and if the Government engineers were mistaken in thinking that the fill in the designated borrow areas was adequate for the design of the levee, the plaintiff had ample opportunity to apprehend the risk and refrain from bidding. It cannot be said that the failure of the fill to behave under tidal waters as plaintiff and the Government expected it to was a "changed condition" in as clear a sense as if the fill itself had failed to comply with contract representations as to its composition. If the fill was heavier or coarser than indicated in the contract documents, as the Board found, nevertheless the plaintiff's ability to manage the heavy elements of the fill with the floating line technique without undue settlement of the soft bottom was demonstrated, thus indicating the fault to be the plaintiff's initial selection of techniques. The behaviour of the fill after placement in tidal waters at the levee site is discussed in greater detail later in this opinion.

5. The plaintiff charges another error to the Board in its failure to take testimony concerning the loss resulting from

an underrun in estimated quantities. It was ultimately found that the levee contained within its pay lines only 5,784,027 cubic yards of hydraulic fill from the borrow pits instead of the 7,714,000 cubic yards called for in the plans, or a shortage of 1,929,933 cubic yards. The Board held, on the authority of *Peter Kiewit Sons' Co.* v. *United States,* 109 Ct. Cl. 517, 74 F. Supp. 165 (1947), and *Chernus* v. *United States,* 110 Ct. Cl. 264, 75 F. Supp. 1018 (1948); that the underrun amounted to a changed condition entitling the plaintiff to an equitable adjustment, and returned the matter to the contracting officer for disposition. Subsequently, the plaintiff accepted from the contracting officer payment of $75,000 under Modification No. 20 "as full and complete compensation for loss of indirect costs occasioned by an underrun in estimated quantity". The plaintiff is now asking reimbursement for further losses it attributes to the underrun, namely, loss of profit and the expense of assembling and operating the floating line, although there is no indication that such alleged losses were ever submitted as such to the contracting officer for decision in connection with Modification No. 20. If they were, the plaintiff certainly never appealed a denial to the Board. Under the circumstances the plaintiff is clearly barred for its failure to exhaust administrative remedies. It is not that the Board erred; it was given no opportunity to err. Moreover, it is difficult to visualize *direct* costs in connection with work that is not performed, such as an underrun in estimated quantities. The theory of recovery for an underrun is to permit the contractor to recoup costs expended in being ready to handle larger quantities than materialize.

6. The plaintiff assigns another error to the Board's refusal to recognize changed conditions as demonstrated by (a) the underrun of fill, (b) the need for a novel method of placing the fill, and (c) the overrun of fill material. The underrun, which has been described in connection with point number 5, *supra,* was recognized by the Board as a changed

condition and was paid for. In the discussion under point 1 of this opinion we have learned the reasons justifying the Board's decision that the need for the plaintiff to use a floating pipeline did not constitute a changed condition. Whether the overrun of fill material was a third demonstration that a changed condition existed requires some explanation.

Of the 7,896,665[6] cubic yards of fill actually removed by plaintiff from the borrow areas and pumped into the levee site, 26.75 percent (or 2,112,638 cubic yards) was not paid for because it was found to be beyond the pay lines of the levee, and the remaining 5,784,027 cubic yards was concluded to be within the pay lines and was paid for at the contract rate. The plaintiff reasons that the Board was inconsistent in finding that a 27 percent *underrun* of fill proved the existence of a changed condition deserving an equitable adjustment, while a 27 percent overrun[7] did not. Under certain circumstances a substantial overrun can derive from a changed condition warranting an equitable adjustment, but where the overrun is the plaintiff's fault or is attributable to risks affirmatively assumed by the plaintiff under specific provisions of the contract, no right to reimbursement arises.

The plaintiff had based its bid estimate on an expectation of an overrun of about 5 or 6 percent of the total amount of fill pumped from the borrow areas, while the Government had expected a 10 percent overrun, as contrasted with the plaintiff's actual overrun of 26.75 percent. The contracting officer found that the large majority of the excessive material was due entirely to the plaintiff's fault and negligence, in placing the fill, and in turn the consequence of inadequate supervision. The Board made no finding as to the plaintiff's

[6] The Board reported 7,996,665, apparently a typographical error.

[7] The term "overrun" is susceptible to more than one meaning, but as used here it means "more fill than anticipated deducted from payments because it was beyond pay limits of the levee design."

fault, negligence, or lack of supervision, but instead attributed the excessive deductions entirely to the effect of storms and hurricanes, on the basis of a dubious formula.

The Board's formula for assigning causes for the underrun was based on two major assumptions. One was that the plaintiff's experience in the first 3,000 offshore feet of the west leg of the levee represented results achievable under ideal conditions (shallow water and hard bottom) so that the deductions measured in that stretch could be projected to the entire six miles of levee to hypothesize a figure for normal deductions throughout the project.[8] The excess of actual total deductions over this hypothetical figure for *normal* deductions was then analyzed and attributed to storms and hurricanes. The second major assumption was that the known figure of 161,000 cubic yards of deductions which was determined to be the result of a particular hurricane on a particular segment of the levee was taken to represent the approximate disturbance which could be attributed to each of the other seven storms and hurricanes visiting the project, so that by multiplication the collective total effect of storms and hurricanes in producing deductions could be estimated. The coincidental closeness of the result to the net result of the first assumption lent a spurious validity to the procedure. The formula is, of course, insupportable.

In the first place it is highly questionable whether the plaintiff's experience in the first 3,000 offshore feet of the west leg of the levee represented a rate of deductions from normal causes that could safely be projected to the entire levee as the basis for a total of what could be considered normal deductions. Hurricane Edna hit the area four days after the first 2,600 feet was completed and before it was

[8] 3,148 cubic yards (average deduction per station for first 30 stations) × 303 (number of stations) = 953,844 cubic yards. 953,844 cubic yards ÷ 7,798,000 cubic yards = 12.23 percent, the Board's reconstructed *normal* rate of overrun.

inspected and accepted, with untold effect on the dispersion of placed fill, so that an indeterminate quantity of deductions in that stretch of 30 stations could be said to result from other than normal conditions. Moreover, the volume of deductions experienced in a stretch of the levee in shallow water, where the cubic size of the levee was minimal, could not be applied as a norm to other sections of the levee in deep water where its cubic size was maximal, for there is no hydraulic rule advanced by the parties which asserts such a standard. Although we are told that the average deduction per station in the first 30 stations was 3,148 cubic yards, the record does not contain a statement as to the cubic yard content designed for each station or for the 30 stations, so no exact percentage of deductions in that segment can be struck. Certainly such a percentage, if known, would be far greater than a station in deeper water having the same number cubic yards of deductions, for the designed cubic content of the deep water station would be much greater.

The second assumption underlying the Board's formula is also faulty in attributing a standard degree of fill disarrangement to each hurricane or storm *per se*. This is to credit nature with more regularity in her performance than our common sense will tolerate, and at best it can be said to gratify an instinctive urge to fortify solutions to such riddles with a set of neat figures. It is no criticism of the Board to challenge its mathematics, for anyone exposed to decisional obligations as a profession realizes that much of the time the result is merely an informed guess, and it must by nature be so.

Disagreement with the mathematical nicety of the Board's result does not prevent an agreement with the Board's general premise that storms and hurricanes were chiefly responsible for the excessive deductions experienced by plaintiff. A close analysis of Appellant's Exhibit No. 1 supports such a conclusion. The exhibit is a composite chart showing

deductions, subsidence, and data concerning storms and surveys throughout the levee in such a way as to permit certain general conclusions to be drawn. With some exceptions the occurrence of a storm or hurricane is shown to have usually coincided with an increase in the rate of deductions, indicating that storms had a pronounced effect on newly placed hydraulic fill.[9] Conversely, during periods of freedom from storms, such as between stations 51 and 120, a relatively modest rate of deductions is apparent. In fact, the percentage of deductions to the total fill in the deep water segment between stations 51 and 120 is lower than the rate in the shallow water of the first 30 stations, which weakens the plaintiff's contention that the behaviour of the fill in tidal water was a changed condition from that which could be anticipated. This is a complex problem, but if the plaintiff is understood correctly one could assume that less difficulty should have been experienced from fill behavior in shallow water than in deep water, because the deep water provides a greater likelihood of dispersion and lack of control of fill once it is deposited, yet the converse seems to have been true in some locations.

The contracting officer found that plaintiff's inadequate supervision and control of the job contributed to this picture, but the Board did not confirm that finding and firm support for it in the record is not enough to reach more than surmise.[10] A substantial contribution to the total deductions, and one for which the plaintiff is technically at fault

[9] The specifications provided that as the contractor completed a section of the levee of 500′ or more in length and before grading or riprapping the completed section, the Government would survey the section for the effects of storms on the completed work. On an average the Government inspected a 1,000′ section almost every month of contract performance.

[10] The deduction increases shown on Appellant's Exhibit No. 1 at points between stations 74 and 94, and between stations 198 and 224, cannot be attributed to storm conditions and raise a question concerning supervision and control that cannot be answered.

for using the wrong technique, was the approximate 300,000 cubic yards outside the pay lines between stations 30 and 51 where the plaintiff not only experienced massive subsidence of the bottom from depositing the fill with conventional shore lines instead of a floating line thereafter employed, but also was plagued by four hurricanes and their consequences.

Government Exhibits 4 and 6 provide additional means for reconstructing the behavior of the fill once it was deposited on the levee site. The exhibits are cross-section profiles of the levee at five different stations spaced apart roughly equi-distantly between stations 77 and 175. In distorted scale they diagram the tolerance lines of the levee slopes, upon which lines are superimposed the profiles of the levee slopes actually formed by plaintiff at those locations. They are supposedly typical of conditions throughout the completed levee, and reveal radical departures of the actual slopes from the designed slopes, there being large areas of the hydraulic fill which are beyond the paylines and some areas where the fill is substantially below the paylines, so that the actual silhouette of the levee in typical cross-section resembles an irregular mound rather than a symmetrical cone. The cause of this asymmetrical appearance, and whether it results from changed conditions as the plaintiff maintains, is the focal issue in the case. It is understood, of course, that in all but a few forgiven instances the plaintiff was charged for the cubic yardage of fill found to be beyond the paylines, by means of deductions at the contract rate from the pay yardage of fill removed by plaintiff from the borrow areas.

In rationalizing the problem, it is an acceptable starting premise that the plaintiff had more opportunity for control of fill above than below the line of mean low water, for once the fill was placed under the water physical forces beyond the plaintiff's control dictated the eventual shape to

be assumed by the fill, provided it was evenly and properly deposited at the point of entrance. We shall confine the present discussion momentarily to those areas of the levee in which the plaintiff employed the floating line technique, which temporarily eliminates from consideration the first mile of levee up to station 51.

The plaintiff used the floating line to deposit hydraulic fill up to the approximate level of –5′ MLW in order to form a firm base and counter the mud wave problem previously described. In operation the floating line deposited fill evenly across a width of 300′, extending 150′ on either side of the center line of the levee at the water line. Assuming this was done properly the fill thus deposited within a 300′ width at the water line was supposed automatically to assume the slope angles required by the design, so that at a depth of –11MLW it was to form a base approximately 800′ wide straddling the center line evenly. The profiles in Government Exhibits 4 and 6 indicate that this did not happen. Instead, in the majority of locations reflected in the available record at depths of from approximately –4′ to –10′ MLW the fill fell substantially below the design slopes, and from there to the bottom it spread out far beyond the toes (i.e., where the design slopes intersected the bottom) of the levee on either side. The plaintiff was paid for fill which came to rest beyond the toes, but was deducted for the fill which came to rest above the paylines within the toes. Very likely the deposition of fill by the floating line caused more of it to disperse in the water and float in suspension to distant locations than when the fill was deposited by conventional lines in a more concentrated manner.

After the levee foundation was installed section by section up to a level of about –5′ MLW with a floating line, the plaintiff built up the remainder of the levee to contract elevations with conventional shore lines whose operation has been described. The shore lines did not have the easy mobility or cover as wide an area as the floating lines. The

plaintiff says they were shifted every 15 or 20 minutes with bulldozers or cranes in order to deposit the hydraulic fill as evenly as possible. They could not be moved beyond a 69' distance from side to side because that was the maximum width of the exposed part of the levee at normal high water. If the fill was spread evenly over this width into the water it was supposed to slide into the water on top of the previously prepared foundation, and if it did not do so there was little that the plaintiff could do to make it assume the required underwater slope, so far as the record discloses. Heavy fill tended to accumulate above the paylines instead of drifting down. Light fill tended to disperse in the water and be carried considerable distances beyond the paylines by tides and currents.

The behavior of hydraulic fill placed in tidal waters is highly unpredictable and beyond human control because of the interaction of such factors as the conglomerate nature of the fill, method of placement, variations in the bottom material, waywardness of tidal currents, and impact of storms, to name the chief agents. The failure of the fill to assume the required shape was substantially beyond control of the plaintiff, but the plaintiff subscribed to the harsh provision of Specification TP1-04a(4), which makes the contractor responsible for excess fill deposited above the paylines "whether it is the result of wash due to normal pumping operations, mud waves which are beyond the control of the Contractor or any other causes whatsoever with the exception of submarine sand bars." No error is found in the Board's conclusions.

7. The plaintiff next assigns error to the Board's attempt to account for the underrun in ways which were not supported by substantial evidence. In briefing this point the plaintiff makes confusing transfers of reference from underruns to overruns, both of which have been discussed at some length under points 5 and 6 of this opinion. Thus the error in the Board's conclusion that the deduction ex-

perience in the first 26 stations of the levee built in shallow water could be used as a basis for a normal deduction rate throughout the levee, has been exposed, but without help to the plaintiff's right to recover. Also, the Board's pseudo-scientific formula demonstrating the precise effect of eight storms and hurricanes in causing excessive deductions has been discounted, without destroying the major premise that storms were the principal cause of excess deductions, again with no benefit to plaintiff's claim. Basically the plaintiff is rearguing its contentions, already disposed of elsewhere, that the fill and the bottom conditions at the levee site were misrepresented. But they were not, as we have seen.

8. Finally the plaintiff says that the Board erred in rejecting expert opinion testimony explaining how the distribution of fill material so far beyond the payment lines demonstrated changed conditions respecting the composition of the borrow areas. The particular passage from the Board's decision is as follows:

> The evidence does not purport to show wherein the borrow material, the estuary bottoms of Hampton Roads, or any other phase or feature of the work differed materially from the representations on the drawings, the indications of the contracts or the circumstances normally to be expected in the construction of a levee in open tidal waters, within the changed conditions definitions of General Provision 4 of the contract, except for opinion testimony amounting to ultimate conclusions. Such testimony constitutes little more than oral repetition of the allegations made in writing, and is fatally inadequate to sustain the burden of proving the allegations of fact forming the issues of the appeal.

Plaintiff's expert witnesses testified that plaintiff's methods of building the levee were proper, that hydraulic fill cannot be controlled once it is in the water, that it assumed its natural hydraulic shape in the water subject to storms and

wave action, and that the soft fill material traveled beyond the pay areas because of its own consistency. This testimony is harmonious with the facts of the case but does not establish any changed condition, whose risk the plaintiff did not assume in the contract. At least it does not go to prove that either the borrow or the bottom were misrepresented, although it infers that perhaps the Government design for the levee was not capable of being met. What the Board obviously meant in the paragraph quoted from its decision is that the conclusions voiced by plaintiff's expert witnesses did not persuade the existence of changed conditions entitling plaintiff to a recovery, not that they could not be entertained. We do not always agree with advice given by expert witnesses, and in that sense we "reject" it as the Board did, not because it is inadmissible but because it is not convincing. The Board was not convinced by the plaintiff's experts.

A brief comment is appropriate concerning the effect of the Changed Conditions clause of the contract, which is of the later variety containing two situations deemed to constitute changed conditions, the second being "unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized, as inhering in work of the character provided for in this contract." The decisions of this court and the ASBCA bearing on this clause are usefully collated, in Sections 29.80 and 29.90 of *Government Contracts,* Vol. 4, McBride & Wachtel. Assuming the correctness of the finding that storms and hurricanes were chiefly responsible for the excessive deductions which increased the plaintiff's costs, indisputably such acts of God are not considered to constitute changed conditions. *Arundel Corp.* v. *United States,* 96 Ct. Cl. 77 (1942); *Arundel Corp.* v. *United States,* 103 Ct. Cl. 688 *cert denied* 326 U.S. 752 (1945); *Breymann* v. *United States,* 106 Ct. Cl. 367, 65 F.Supp. 398 (1946); *Warren Bros. Roads Co.* v. *United States,* 123 Ct. Cl. 48,

105 F. Supp. 826 (1952). To the extent that the effect of these holdings may have been diluted by *John A. Johnson Contracting Corp.* v. *United States,* 132 Ct. Cl. 645, 132 F.Supp. 698 (1955), it is believed that the provisions of the contract in suit whereunder the plaintiff voluntarily assumed the cost of excessive deductions *from any causes whatsoever,* which would include storms, differentiate the present claim from any exception to the general rule. Because of these same provisions the plaintiff can derive no help from the type of argument successfully employed in *Paccon, Inc.,* ASBCA 7643, 62 BCA 3546 (1962), where the unpredicted behavior of clay known to be present in the area of the worksite was found to constitute a changed condition justifying an equitable adjustment for excessive costs.

Under all the circumstances it is quite clear that the decision of the Board was neither arbitrary nor capricious, and that in major part it was supported by substantial evidence. The minor disagreements explained herein do not affect the result.

CONCLUSION OF LAW

Upon the foregoing opinion of the commissioner reciting the controlling facts of the case, which opinion as revised herein, and facts are made a part of the judgment herein, the court concludes as a matter of law that the plaintiff is not entitled to recover and the petition is dismissed.

APPENDIX B

GENERAL PROVISIONS (Standard Form 23)
(CONSTRUCTION CONTRACTS)

4. CHANGED CONDITIONS

The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or the time required for, performance of this contract, an equitable adjustment shall be made and the contract modified in writing accordingly. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given notice as above required; provided that the Contracting Officer may, if he determines the facts so justify, consider and adjust any such claim asserted before the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause 6 hereof.

SPECIFICATIONS

PART II—GENERAL CONDITIONS

GC-1. SCOPE OF WORK: The work to be performed under this contract consists of furnishing all plant, materials, equipment, supplies, labor and transportation, including fuel, power, water (except any materials, equipment, utility or service, if any, specified herein to be furnished by the Government), and performing all work as required

by Article I of the Contract, in strict accordance with the specifications, schedules, and drawings, all of which are made a part hereof, and including such detail drawings as may be furnished by the Contracting Officer from time to time during the prosecution of the work in explanation of said drawings.

PART IV—TECHNICAL PROVISIONS

SECTION 1—HYDRAULIC FILL

TP 1-04. PERFORMANCE OF WORK:

a. *Hydraulic Filling:*

(3) *Placement of Fill.* The hydraulic filling shall be conducted in such a manner as to achieve a gradual building up of the base of the fill by the use of parallel discharge lines or by lateral shifting of a single discharge line. In no case shall the levee be pumped to full height with steep side slopes and allowed to slump.

(4) *Determination of Adequacy or Deficiency.* For the purpose of determining any deficiency or excess of material in the hydraulic fill, a survey will be made by the Government in advance of the levee construction and a second survey will be made as soon as practicable after the Contractor notifies the Contracting Officer that he is ready to grade, riprap, and construct the roadway on a section of levee of reasonable length but not less than 500 feet. Final grading preparatory to the placing of the riprap will not be permitted closer than 1500 feet behind the completion of the hydraulic filling in order to allow time for the initial settlement. The completion of the hydraulic filling to the required grade shall not precede the completion of the revetted section by more than 2,500 feet. If the survey indicates that the levee section does not meet the minimum tolerances shown on the drawings because of settlement,

erosion, or because sufficient material was not originally pumped, the Contractor shall build the levee up to the required grade by pumping or other means satisfactory to the Contracting Officer. Any material that the survey indicates as being above or beyond the plus tolerances indicated on the plans, except any additional material that may be required to construct the revetted section, will be considered as excess material and shall be deducted from the quantities to be paid for as described in par. TP 1-05 below. The material excavated from the toe trench shall be used in the fill for the revetted section and this quantity will be taken into consideration when computing the amount of additional material required to construct the revetted section. Any material lying above or beyond the plus tolerances indicated on the drawings will be deducted as excess material whether it is the result of wash due to normal pumping operations, mud waves which are beyond the control of the Contractor *or any other causes whatsoever* with the exception of submarine sand bars. Submarine sand bars sometimes form as a result of wave action. Such bar formations consist of a crest or ridge to seaward and a trough or depression to shoreward. Should submarine sand bars develop, the material laying above the plus tolerance line as a result of such formations will not be deducted as excess material and the contractor will not be required to fill any areas which might be below the minus tolerance lines as a result of such wave action. The sections taken after the levee has been pumped to determine the amount of excess material to be subtracted from the borrow pit quantities will be extended to a point where the difference between the original and after dredging section is 0.1 foot, but in no event will such sections extend more than 2000 feet beyond the centerline of the levee. (Emphasis added.)